

Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

## Project – Atomic Theory Timeline

### Introduction

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Many people have contributed to our current understanding of the atom. While we now know that earlier atomic models were incorrect, they were important stepping stones to our current understanding. As with any scientific theory, atomic theory has evolved over the years as new information comes to light. Even today, atomic theory is still changing. By studying how atomic theory has changed, we can better understand the scientific process of using experimental evidence to test current models and improve scientific theories.

### Objectives

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- Study the history of atomic theory.
- Observe how new experimental evidence is used to improve scientific theories.

### Materials

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- Computer loaded with Microsoft PowerPoint
- Create an “Atomic Theory Timeline” folder which contains template slides, pictures, and movies

### Instructions

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1. As a group, choose one of the following scientists to research: (circle your scientist)

• Becquerel	• Chadwick	• Millikan	• Schrödinger
• Bohr	• Dalton	• Rutherford	• Thomson
2. Use your chemistry book, other textbooks, and reliable Internet sources to find out the following information about your scientist:
  - What experiment(s) did he perform, if any?
  - What theory or discovery did he make?
  - What was his atomic model called? What did it look like?
3. In the *Atomic Theory Timeline* folder, open the PowerPoint slides for your scientist. Insert a usb. From the **File** menu, choose **Save As**. Add your course code and period number to the end of the file name (e.g. “Thomson slidesSCH3U\_P2”) and save it to the **USB** Save your slides often to avoid lost work.
4. Complete all slides as an home work assignment or during allotted class time (this assignment is an homework assignment)
  - Slide 1: Insert the date(s) associated with his discovery in the slide title. Complete the text box with a summary of his theory/discovery. Use short bulleted phrases rather than long sentences. Stick to the most important information & use language that you understand.
  - Slides 2-3: Insert movies and/or pictures that are relevant to your scientist. These files may be found in the *Atomic Theory Timeline* folder. Make captions for any movies or pictures. You should have at least one movie or picture!

5. When you are finished, delete any unused slides. View your slides in Presentation Mode to check for errors. Save your file and check to make sure it is on the usb.

6. Be prepared to explain your scientist to the class during the next class period.
  - Each member should talk during your presentation.
  - Follow basic guidelines for a good PowerPoint presentation – keep colors, fonts, etc. consistent, use bulleted phrases instead of paragraphs, don't overcrowd a slide with too much text, keep animations, clip art, etc. simple to avoid distracting from your content.
  - Follow basic guidelines for a good oral presentation – make eye contact, minimize distractors, project so that you can be heard, use language appropriate to your audience, use note cards if necessary but do not “read” your presentation.
  - Of course, keep in mind that this is only a mini-project. You are not expected to be an expert. However, you should be able to explain how your scientist used the results of his experiment to come up with his theory.

## PowerPoint Help

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### Inserting pictures:

1. From the **Insert** menu, choose **Picture > From File**.
2. Browse to the *Atomic Theory Timeline* folder. You should be able to preview each picture. Choose the desired picture and click **Insert**.
3. Drag the corner of the picture to change its size while maintaining correct proportions.

### Inserting movies:

1. To preview movies, open the *Atomic Theory Timeline* folder and double-click on each movie to view it. Return to PowerPoint to insert the desired movie.
2. From the **Insert** menu, choose **Movies and Sounds > Movie from File**.
3. Browse to the *Atomic Theory Timeline* folder. Choose the desired movie and click **OK**.
4. When asked if you want your movie to play automatically, click **No**. This will allow more control over starting and stopping the movie during the presentation. Simply move the cursor over the movie (turns into a hand) and click to play. Clicking again will pause/play/pause/play, etc. NOTE: The cursor (hand) must be over the movie. Otherwise, clicking will cause PowerPoint to advance to the next slide.
5. Drag the corner of the movie to change its size while maintaining correct proportions.

Group \_\_\_\_\_ Class \_\_\_\_\_

## Atomic Theory Timeline

### Content \_\_\_\_\_

- 20 You presented accurate information and were able to explain it to the class.
- 10 You presented fairly accurate information and were somewhat able to explain it to the class.
- 0 You presented inaccurate information and were unable to explain it to the class.

### PowerPoint Design \_\_\_\_\_

- 10 You used bulleted phrases instead of paragraphs, made good use of space, and utilized animations, etc. effectively without detracting from the content.
- 5 You generally adhered to the above guidelines, but with several exceptions.
- 0 You did not adhere to the above guidelines.

### Oral Presentation \_\_\_\_\_

- 10 You made eye contact with the audience, minimized distractors, projected well, and used appropriate language.
- 5 You generally adhered to the above guidelines, but with several exceptions.
- 0 You did not adhere to the above guidelines.

### Participation \_\_\_\_\_

- 10 All team members participated in the preparation and presentation of your information as circumstances allowed.

### Base Score \_\_\_\_\_

### TOTAL SCORE \_\_\_\_\_

Group \_\_\_\_\_ Class \_\_\_\_\_

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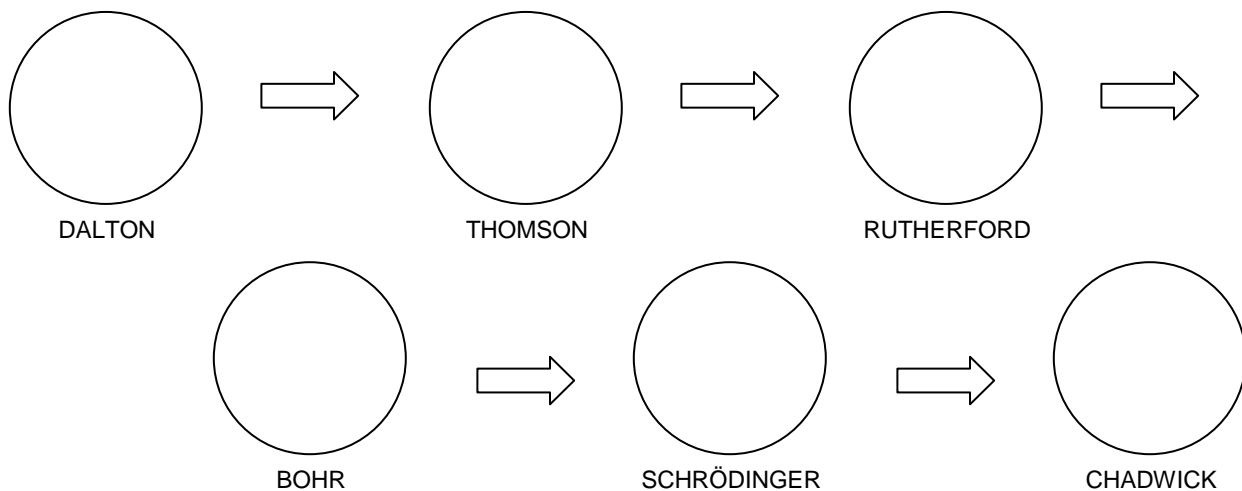
### Base Score \_\_\_\_\_

### TOTAL SCORE \_\_\_\_\_

Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

## Atomic Theory Timeline Lecture Handout

### Atomic Models



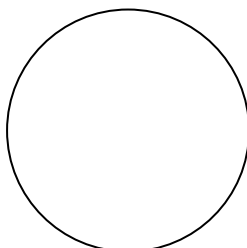
### Scientist Data Chart

SCIENTIST	EXPERIMENT	THEORY/DISCOVERY
Democritus		
Dalton		
Becquerel		
Thomson		
Millikan		
Rutherford		
Bohr		
Schrödinger		
Chadwick		

Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

## Atomic Theory Timeline Quiz

1. Draw a diagram representing the atomic model developed by Rutherford. Be sure to LABEL ALL IMPORTANT COMPONENTS INCLUDING CHARGES.



RUTHERFORD

Match the experiment or discovery on the left with the appropriate scientist on the right.

- |  |                |
|--|----------------|
| _____ 2. Developed the electron cloud model of the atom. | A. Becquerel   |
| _____ 3. First proposed the concept of the atom.         | B. Bohr        |
| _____ 4. Calculated the mass and charge of an electron.  | C. Chadwick    |
| _____ 5. Discovered negatively charged electrons.        | D. Dalton      |
| _____ 6. Proposed that atoms were uniform spheres.       | E. Democritus  |
| _____ 7. Discovered radioactivity.                       | F. Millikan    |
| _____ 8. Stated that electrons move in circular orbits.  | G. Rutherford  |
| _____ 9. Discovered a dense, positively charged nucleus. | H. Schrödinger |
| _____ 10. Proposed the existence of neutrons.            | I. Thomson     |

11. Number the following models in chronological order, starting with 1 for the earliest model.

- \_\_\_\_\_ Billiard ball model
- \_\_\_\_\_ Neutron model
- \_\_\_\_\_ Electron cloud model
- \_\_\_\_\_ Nuclear model
- \_\_\_\_\_ Planetary model
- \_\_\_\_\_ Plum-pudding model

BONUS: Name the experiments performed by the following scientists.

- (1) Millikan: \_\_\_\_\_
- (2) Rutherford: \_\_\_\_\_
- (3) Thomson: \_\_\_\_\_